

some portion, but the dates on which precipitation was most widespread and in greatest volume were the 8th to 10th, 13th to 14th, 17th to 19th, and on the 31st.

Precipitation was greatly deficient in most of the Southern States, particularly from western Alabama to Arkansas and central Texas, the month being the driest July of record at points in eastern Texas, and among the driest of record at points in Louisiana. Over much of Florida and locally in Georgia, eastern Alabama, and the coast districts of the Carolinas the monthly amounts were above normal, in some cases far above, due to heavy falls on a few days rather than to any excess of rainy days.

Precipitation was largely deficient from central Virginia to southern New England, the total falls in portions of the latter section amounting to less or only slightly more than half an inch. There was likewise a large deficiency in the lower Ohio Valley, and in portions of Iowa and the northern Plains.

Dry weather continued in most districts from the Rocky Mountains westward, save in portions of the northern Rocky Mountain and Plateau regions, where locally there were some good rains. In the Pacific coast States drought continued, though of course rain is not expected at this season of the year. However, the absence of the usual falls earlier in the season has resulted in a greatly reduced supply of water. Stream flow continued the lowest of record, particularly in California, and old wells were dug deeper and new ones opened to alleviate the water shortage. Hydroelectric plants were unable to deliver the required amount of power, and

auxiliary steam plants were operated everywhere to augment the output.

On account of the continued drought in the far West and the dry and heated condition of the forests, the fire hazard was greatly increased and forest fires were frequent, and in many cases hard to control.

SNOWFALL

An unusual fall of snow was reported from the high elevations of the Yellowstone Park locality on the 20th, where depths of 4 to 6 inches occurred, continuing for a period of nearly 24 hours.

RELATIVE HUMIDITY

The extreme drought conditions existing during the month in the lower Mississippi Valley and adjacent portions of Texas were attended by a marked deficiency in the percentage of relative humidity in that section as compared with the normal, and similar conditions existed in most districts from the Rocky Mountains westward. In other parts of the country the departures from normal were not unusual.

The month was distinctly lacking in sunshine in portions of the Southeastern States, notably in Florida and southern Georgia, and less so in the southern Appalachian Mountains. Elsewhere there was mainly abundant sunshine, and it was almost continuous in the Great Valleys of California and in western Arizona.

SEVERE LOCAL HAIL AND WIND STORMS, JULY, 1924

[The table herewith contains such data as have been received concerning severe local storms that occurred during the month. A more complete statement will appear in the Annual Report of the Chief of Bureau]

Place	Date	Time	Width of path ¹	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Richards, Colo.	1	4 p. m.	8,800		\$10,000	Heavy hail	Roofs damaged; chickens killed.	Official, U. S. Weather Bureau.
Los Lunas, N. Mex.	1	6-6:30 p. m.	2 mi.		10,000	do.	Damage chiefly to crops.	Do.
Hooker, Okla.	1					do.	Large area of fine wheat total loss.	Do.
Stead (near), N. Mex.	1	3 p. m.	10 mi.		10,000	do.	Character of damage not reported.	Do.
Stevens County, Kans.	1	4 p. m.	3-7 mi.			Hail	Very destructive storm; 30,000 acres of wheat ruined; other crops bent; path 40 miles long.	Do.
Winsors, N. Mex.	2	4 p. m.	3 mi.			Heavy hail	Roofs and gardens damaged.	Do.
Dimmitt, Tex.	3	8:15 p. m.	8 mi.		500,000	Hail	Total loss of crops.	Do.
Landrum, S. C.	4					do.	Moderate damage.	Do.
Livonia, N. Y.	5	3:30 p. m.	7,040			Heavy hail and rain.	Orchards, vineyards, and buildings damaged; grain injured; telephone and telegraph poles down.	Official, U. S. Weather Bureau; Rochester Herald (N. Y.).
Lake County, Ill. (w. and sw. of Grayslake)	7	2 p. m.	2-3 mi.			Hail	Considerable crop damage.	Official, U. S. Weather Bureau.
Burlington, Wyo.	7	2 p. m.	1,760		5,000	Heavy hail	Crops damaged and poultry killed.	Do.
Grundy County, Iowa	7	P. m.			100,000	Hail	Total loss of crops to many farmers.	Do.
Airlie, Minn.	11	6 p. m.	4-5 mi.			Small tornado	Four buildings wrecked.	Official, U. S. Weather Bureau; Press and Dakotan (Yankton, S. Dak.).
Lamar, Mo.	11-12					Wind and rain	Damage principally to crops.	Official, U. S. Weather Bureau.
Furnas County, Nebr.	12	7 p. m.	6 mi.			Heavy hail	Loss of crops partial to total; buildings more or less damaged.	Do.
Decatur County, Kans.	12	11 p. m.	4-6 mi.			Hail	Very destructive storm; wheat and other crops heaviest sufferers; some property damage.	Do.
Smith County, Kans.	12	P. m.	1,320			do.	Growing crops badly injured.	Do.
Ellsworth County, Kans.	13	5 p. m.	10-15 mi.			do.	Damage comparatively small.	Do.
Ford County, Kans.	13	P. m.				Tornado	Farm buildings damaged.	Do.
Dodge City, Kans. (5 mi. sw. of)	13	P. m.				do.	Minor damage reported.	Do.
McPherson County, Kans.	13	7 p. m.			100,000	do.	Barns, houses, windmills, poles, and wires leveled; much stacked wheat blown away.	Do.
Butler County, Kans.	13	8:15-8:45 p. m.	80-880	1	2,000,000	do.	20 persons injured rather seriously, 80 slightly. Augusta suffered most; 76 dwellings, 21 business houses, and 1 church destroyed; many others damaged; 300 oil rigs wrecked in near-by territory.	Do.
Devon, Kans. (Bourbon County)	13	9:30 p. m.	66			do.	Destruction confined to barns, trees, and outbuildings.	Do.
Bourbon County, Kans., from Fort Scott north.	13	P. m.				Severe wind	Damage chiefly to barns, garages, telephone and telegraph poles.	Do.
Chase County, Nebr.	13	9:30 p. m.	2-mi.			Hail	Loss of crop estimated at from 25 to 75 per cent.	Do.
Jeffersonville, N. Y.	13		880			Moderate hail	Corn stripped; potatoes beaten to ground.	Do.
Claiborne County, Tenn.	14	P. m.	1-3 mi.			Hail	Corn, tobacco, and tomatoes damaged. Path 25 miles long.	Do.

¹ Yards when not otherwise specified; "mi." signifies miles

SEVERE LOCAL HAIL AND WIND STORMS, JULY, 1924—Continued

Place	Date	Time	Width of path	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Jefferson and Cocke Counties, Tenn. (parts of).	14	P. m.			50,000	Hail	Total loss of crops in parts of path.	Official, U. S. Weather Bureau.
Oconto County, Wis.	15	5 p. m.	2 mi.			Heavy hail.	Crops considerably damaged.	Do.
Purdum, Nebr. (2 mi. e. of).	16	6 p. m.				Small tornado.	One residence and several farm buildings wrecked; some livestock killed.	Do.
Nance, Merrick, and Polk Counties, Nebr.	16	8-9:30 p. m.	4-6 mi.			Hail and wind.	Much harm to gardens and small grains; windmills blown down, trees uprooted, buildings damaged.	Do.
Port Huron, Mich., and vicinity.	16	P. m.				Electrical and wind.	Several barns struck and burned; wire lines and trees blown down.	Do.
Sedalia to St. Louis, Mo.	16-17	11 p. m.-3 a. m.			115,000	Electrical and wind.	Extensive damage to trees, wire systems, buildings, and crops.	Do.
Simpson (near), Colo.	17	4 p. m.	1,760		2,000	Heavy hail and electrical.	Some stock killed by lightning; small property and crop damages.	Do.
Bridgeton and Millville, N. J. (vicinity of).	17					Hail.	General damage reported.	Do.
Eastport, Me.	17	11 a. m., 6:10 p. m.				Electrical.	Slight damage in city, considerable in neighboring towns.	Do.
Fitchburg (near), Mass.	17	Noon.	17-1,400	2	{ 500,000- 1,000,000 }	Tornado.	Heavy property damage. A detailed account will probably appear in a later Review.	Do.
Broadus, Mont. (10 mi. w. of).	18		200			do.	Ranch house and barn damaged.	Do.
Holyoke, Colo.	19	6:30 p. m.	5-6 mi.			Heavy hail and wind.	Buildings, trees, and crops damaged; poultry killed.	Do.
Rattlesnake Buttes (near), Colo.	20	P. m.				Heavy hail.	75 lambs and numerous rabbits and birds killed.	Do.
Fortsonia, Ga.	20	7 p. m.	3 mi.		175,000	Hail.	Crops completely destroyed; many buildings damaged. Path 6 miles long.	Do.
Lake Erie to Hudson Valley, N. Y.	20-21					Thunderstorms.	Heavy fruit, crop, and property destruction.	Do.
Dane, Iowa, Jefferson and Rock Counties, Wis.	20-21	P. m.			40,000	do.	Loss mainly of farm buildings and crops.	Do.
Norfolk, Nebr.	21	12:30 a. m.	75			Tornado.	Several residences damaged, trees uprooted, light and telephone poles down.	Do.
Independence County, Iowa	21	1 a. m.	1,320		75,000	Hail.	Severe damage to crops and some roofs.	Do.
Dewar, Iowa.	21	P. m.	3 mi.		125,000	Hail, wind and rain.	Extensive crop damage; livestock injured.	Do.
Hamilton County, Iowa (n. half of).	21	5 p. m.			10,000	Hail.	Destruction of property and crops reported.	Do.
Eastern Grant and northwestern Lafayette Counties, Wis.	22	3:30-5:30 p. m.	2-10 mi.		100,000	Strong wind.	Farm buildings and crops severely damaged; much livestock injured.	Do.
Charles City, Iowa, and vicinity.	22	P. m.				Wind and hail.	Wires and poles down; crops badly damaged.	Do.
Summerton, S. C.	23	P. m.		1		Thunderstorm.	Damage not reported.	Morning Daily State (Columbia, S. C.).
Hamburg (near), Pa.	23	6:30-6:32 p. m.	880			Tornadoic wind.	One barn, several outbuildings and 3 acres of orchard destroyed.	Official, U. S. Weather Bureau.
Iowa Falls, Iowa.	23	10 p. m.	2 mi.		50,000	Hail.	Corn loss, 100 per cent; oats, 50 per cent.	Do.
Palma, N. Mex.	24	2:30 p. m.	880		2,000	Heavy hail.	Storm covered about 7 miles, causing great damage.	Do.
Tajique (near) N. Mex.	24				60,000	Heavy hail and rain.	Greatest damage by flooding of fields and pastures.	Do.
Jackson Ferry Landing, New Orleans, La.	24	5 p. m.		5	23,225	Thundersquall.	River packet capsized, damaging boat and cargo. Some roofs near by damaged.	Do.
Martinsburg, Mo.	24	11:40 p. m.	3,520			Wind.	Barns blown over; 2 cows killed; wire systems and trees damaged.	Do.
Harlem, Mont. (7 mi. w. of).	25	2:40 p. m.	100			Tornado.	Farm home and many farm buildings demolished; large cottonwood trees twisted off.	Do.
Clint, Tex.	25		880			Heavy hail.	Cotton stripped; other crops injured.	Do.
Jacksonville, Fla.	25				200,000	Electrical.	Damage chiefly to Armour factory.	Do.
Palo Alto, Kossuth, and Humboldt Counties, Iowa.	27	2:30-4:30 p. m.				Hail.	Considerable crop and property damage throughout area covered. Damage in Palo Alto alone estimated at \$150,000.	Do.
Dubuque County, Iowa.	27	4 p. m.				do.	Considerable loss of crops.	Do.
Grundy Center, Iowa.	27	5 p. m.	4 mi.		50,000	do.	Corn crop ruined; other minor damage.	Do.
Plymouth County, Iowa.	27	6 p. m.	4 mi.		300,000	do.	Crops heavily damaged; poultry killed and stock injured.	Do.
Munising, Mich.	27					Hail and wind.	Hailstones large, but no great damage.	Do.
Jamestown, N. Y.	28	4 p. m.				Hail, rain, wind and electrical.	Corn stripped, vineyards damaged, highways washed out, wire communication interrupted. Three barns burned.	Do.
Genesee and Wayne Counties, N. Y.	29					Winds.	Thousands of dollars damage to young celery plants, onions, and lettuce.	Do.
McDonough County, Ill.	29	P. m.	1,760		200,000	Wind and rain.	5 barns and a house unroofed, corn laid flat; thousands of acres of bottom lands at Macomb damaged by flooding.	Do.
Smithfield, R. I.	30					Wind.	Unfinished roof collapsed, injuring a number of workmen.	Do.
Acton (near), Ind.	30					Tornado.	Slight damage.	Do.
Mountain Park, N. Mex.	30	Noon-1 p. m.	1,760		15,000	Heavy hail.	Homes and orchards badly damaged.	Do.
Manistee, Mich.	30	6:30 p. m.			10,000	Hail, wind, and rain.	Character of damage not reported.	Do.